UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/674,492 | 09/30/2003 | Yoshifumi Kato | 5095-4068 | 4676 |

27123 7590 02/08/2005

MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

| EXAMINER | |
|---|---|
| VU, PHU | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2871 | |

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/674,492 | KATO, YOSHIFUMI | |
| | Examiner | Art Unit | |
| | Phu Vu | 2871 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *9/30/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 4, 6, 8, 9 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kahen et. al US Patent 6,687,274.** Kahen teaches a light-emitting device having a light source body generating light (active layer see abstract), a plurality of resonant layers each with a predetermined wavelengths (top and bottom dielectric stacks ) and the top and bottom stacks each reflective over a certain range of wavelengths. **Regarding claim 16,** the limitation of a lighting unit does not distinguish over claim 1, because a light-emitting unit can be a lighting unit therefor this limitation is inherent.

**Regarding claim 6,** the reference teaches the two dielectric stacks spaced apart by layers 130 and 170.

**Regarding claim 9,** the reference teaches an electrode paired with the resonant layer (figure 1 element 150 patterned reflectance modulator).

**Claims 1, 5 and 8 rejected under 35 U.S.C. 102(b) as being anticipated by Xu et. al. US Patent Number 5949187.** Xu teaches a light-emitting device light source (cover figure element 11), a plurality of resonant layers, each resonating light with a

predetermined wavelength (defined by L2 and L3), and each wavelength being different from at least one of the other wavelengths. Xu also teaches the plpurality of resonant layers is formed adjacent to each other in a direction which the resonant layers overlap (see cover figure elements 13 and 14).

**Regarding claim 3,** the reference teaches an organic electroluminescent device (cover figure element 11).

**Regarding claim 8,** the reference teaches each resonant layer comprised of two reflecting layers disposed opposite of each other. Regarding the limitation of partial reflection this is considered inherent since each resonant layer already operates within a certain wavelength therefore will only reflect a portion of the light and pass other wavelengths.

**Regarding claim 4 and 9**, the reference teaches comprising electrodes (cover figure element 18) with the resonant layers.

**Claims 1, 4, 8, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama US Patent 5,682,402.**

**Regarding claim 1,** the reference discloses a light-emitting device comprising a light-source body generating light and a plurality of resonant layers each resonating light with a predetermined wavelength (resonators indicated as A and B in figure 5) and each of a different wavelength.

**Regarding claim 12,** the reference teaches a liquid crystal display with the elements of claim 1 (see figure 6a element 8 liquid crystal layer).

**Regarding claims 8 and 13,** the reference teaches one of the first and second resonant layers that partially reflect light (fig. 6a element 4b), the first reflector with a first reflecting structure being arranged on the first side though which the light is output (figure 6a element 4b), the second reflector arranged opposite the first side (figure 6a element 1), the first reflector facing the second opposited the first side. The resonator is resonates light with a predetermined wavelength (see column 5 lines 1-4).

**Regarding claims 4 and 9,** the reference teaches an organic electroluminescent device wherein the one of the first or second reflectors is combined with an electrode (figure 6a element 1 is a reflective electrode).

**Regarding claim 10,** the reference teaches an electrode (figure 6a element 1) that serves as the electrode for a plurality of resonators.

**Regarding claim 11,** the reference teaches the second reflector (figure 6a element 1) totally reflecting light (see column 6 lines 59-61).

**Regarding claim 12,** the reference teaches a liquid crystal display with the elements of claim 1 (see figure 6a element 8 liquid crystal layer).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Kahen.** The reference does not expressly disclose a light-emitting device emitting white light however white light emitting devices are well known in the art to emit light across the entire visible spectrum. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a light source that emits white light to gain light that emits across the entire visible spectrum.

**Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Kahen and further in view of Yokoyama US Publication No. 2001/0055084.** Kahen discloses all the limitations of claim 7 except a flexible resonant layer, however Dodabalupur does disclose the resonant layer. Yokoyama discloses a flexible layer structure that helps facilitate liquid crystal injection in a liquid crystal display (see column 23 lines 31-36). Therefore, at the time of the invention, it would have been obvious to on of ordinary skill in the art to include a flexible resonant layer to facilitate liquid crystal injection for use in a liquid crystal display.

**Claims 14, 15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama US Patent 5,682,402.**

**Regarding claim 14,** the reference does not expressly disclose a color filter however it does teach a the light emitted from the light emitted device including a plurality of colors (red, green, and blue) depending on the tuning of the layer. Color filters are well-known in the art for liquid crystal displays to allow light of certain wavelengths to pass through. Therefore, at the time of the invention, it would have

been obvious to one of ordinary skill in the art to include a color filter in a liquid crystal device to allow for emission of certain colors.

**Regarding claim 15,** liquid crystal displays with red, green and blue color filters are well-known in the art to produce light of red, blue and green colors. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to include red, green, and blue colored light using color filters.

**Regarding claims 17 and 20,** Nakayama teaches resonance brought about by the resonant wavelength being twice the optical-distance between the reflectors (see column 1 lines 31-39). Therefore a distance t1 and t2 are a multiple of half the wavelength of the desired wavelength of that is resonated. The limitation of t1 + t2 equal a multiple of the third desired wavelength is shown in figure 1a (long double arrow set). A second distance t2 is also shown between the third and second reflectors (elements 1 and 4b). The reference also suggests a distance t1 between first and second reflectors 4a and 4b (formed by the dotted line in figure 1a). While the reference does directly teach an embodiment with a resonator with distance t1 figure 1a suggests this (through the dotted line) in order to achieve a third resonator without the addition of another reflector. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to form a resonator between the second and third reflecting layers in order to resonate an additional wavelength without the need for another reflector. **Regarding claims 20 and 21**, the limitation of t3 denoting a third distance is inherent because t3 can merely be called t1+t2, and thus the third reflector resonates a plurality of frequencies.

**Regarding claims 19 and 23,** the reference teaches the third reflector (figure 6a element 1) totally reflecting light (see column 6 lines 59-61).

**Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama US Patent 5,682,402 and further in view of Dodabalapur US Patent 5,405,710.**

**Regarding claims 18 and 22,** Nakayama discloses all the limitations of the claim except the resonate wavelengths corresponding to red, green and blue light. Dodabalapur teaches microcavities (resonators) used to resonate red, green, and blue light to realize a display (see abstract). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to resonate red, blue, and green light to realize a display.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562. The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
AU 2871

KENNETH PARKER
PRIMARY EXAMINER